

per cent of cases of forearm (single and double) fractures and the fibula was fractured in 79 per cent of cases of leg (single and double) fractures. The lower third of the radius is the most fragile part of the bone and was fractured in 91 per cent of single radial fractures and the lower third of the fibula is the weakest point of the bone and was fractured in 88 per cent of single fibular fractures. The upper end of the ulna is the commonest seat of single ulnar fractures and the lower third of the tibia the commonest place of single tibial fractures. The lower third of the radius and ulna is the commonest seat of double forearm fractures and the lower tibial third, the commonest level of the leg double fractures. The classic fractures of Colles, Pott, Dupuytren, as conceived by these authorities are comparatively rare. Epiphysal fractures are commoner at the wrist. The marginal fractures of the radius (Barton, Letenneur) are rarer than the marginal tibial fractures. Longitudinal or medullary splits are commonest in the fibula. Chauffeur's fracture may occur at the upper end as well as at the lower end of both radius and ulna. The commonest direction of the fibular fractures is from before backward and upward and is usually incomplete. Fractures of the tubercle appear to occur in a growing bone and fractures of the tibial tuberosity in an adult bone. Fractures of the upper half of the ulna, radius, tibia and fibula diaphysis are usually due to direct trauma.

Duodenectomy (An Experimental Study).—MANN and KAWAMURA (*Ann. Surg.*, 1922, 75, 208) say that their experiments show that the duodenum is not necessary for life and the fact that noteworthy changes were not observed makes it appear that its function does not differ greatly from that of the rest of the intestinal tract. Only one positive finding was obtained. In two of the dogs a large ulcer was found on the jejunal side of the suture line of the gastrojejunal anastomosis. In one of the animals the ulcer perforated, causing peritonitis and death. Since peptic ulcer of the subacute or chronic type is very rare in the dog, it seems significant.

The Treatment of Fractures.—SMITH (*Brit. Med. Jour.*, April 2, 1921, p. 483) says that conservative treatment by splinting has again come into its own purely on account of the excellent results gained by standardized methods in thousands of gunshot compound fractures obviously unsuitable for operative fixation of the fragments. Where experience tells one that good functional results cannot be obtained by splinting alone, we should be prepared to operate, provided we have experience in that method also. The main essential is that, following general principles guiding treatment, we shall pay the strictest attention to details in whatever method we adopt. The author advocates the principles laid down by H. O. Thomas and Sir R. Jones in the mechanical treatment of fractures, namely, a fracture is a potential deformity and must be regarded as such. Strong, steady, fixed extension with corresponding counterextension is required, as distinguished from forcible, intermittent pull succeeded by a period of muscular relaxation; correct alignment in conjunction with obliteration of shortening; avoidance of rigid, circular compression, which tends to produce ischemia. Union may be delayed—this is sometimes unavoidable; but there is a vast difference between delayed union and non-union.

Union of a fracture does not imply its consolidation. Both mal-union and non-union are common occurrences and are often related. In fractures of the neck of the femur the angle between neck and shaft is reduced and a condition of coxa vara results. In fracture of the upper third of the shaft the upper fragment is abducted, the lower fragment pulled up to the inner side of the upper one, and a shortened, bowed femur results. In fractures of the middle of the shaft there is a concavity forward instead of the normal convexity. The same deformity is present in the lower fourth of the shaft. Fractures in upper third of the leg may lead to a high bow-leg. Fractures of the middle third may result in knock-knee with either inversion or eversion of the foot. Fractures of the lower end of the lower third of both bones generally end with a valgoid deformity of the foot with an internal rotation. These are the commonest reasons for mal-union: being too sparing with traction; inefficient splinting, and the effect of allowing body weight to fall on recovering bone too soon. If there be pain over the site of a fracture of old standing, especially on digital pressure, unsound union may be suspected, and if this pain be accompanied by an exuberant callus formation the diagnosis is absolute. Some fractures are slower than others in beginning to unite. Too much interference in the way of constantly moving the fragments to see whether union is occurring is apt to end in non-union. In comminuted fractures the wholesale removal of bone fragments is apt to result in non-union also. Treatment by what Thomas called damming and hammering is of assistance. In fractures of the lower extremity, operation should be postponed until the effect of the patient getting about with the aid of an appliance has been tried, for the number of stubborn non-unions that respond to this simple procedure is surprising. The need for operation having arisen, the question whether this should consist of freshening the fractured ends and bone-plating or bone-grafting is one which depends upon personal choice. Likewise, the question what fractures should be treated at once by operation, and which by splinting, must be answered by the individual surgeon. The author generally operated on spiral fractures of the lower third of the leg by means of inlay grafts, but plating is equally satisfactory in skilled hands. Fractures of the patella in transverse axis are treated by wiring, as are also fractures of the olecranon where there is a large gap with rotation of the fragments. Scaphoid fractures are also operated where the proximal fragment prevents full hyperextension of the wrist and where there is palmar dislocation of the semilunar bone; removal of the proximal portion of the scaphoid is generally sufficient. All other fractures are treated by means of splinting or posture or both combined in some cases with rigid extension and counterextension. Fractures of the neck of the femur and the upper fourth of the shaft are best treated in the double Thomas frame with extension straps on both legs, the affected limb being widely abducted. The groin on the sound side gives adequate counterextension. In old people it is advisable to fit a walking caliper, made one-half inch too long, and allow the patient up on crutches. Careful nursing is essential in cases treated on a frame: the back must be carefully rubbed with talcum twice daily—the flat of the hand being carefully interposed between the skin of the back and the pad of the frame; an alcohol rub twice weekly is also necessary; with these rules strictly

obeyed, no skin trouble need be feared. Fractures of the middle and lower portions of the shaft of the femur, fracture of the condyles and fractures of tibial tuberosities and shaft in the upper three-fourths are all treated in the Thomas knee-bed splint. The use of calipers, ice-tongs and Steinman's pins to produce traction are complications which are only applicable in hospitals, in the hands of experts, and in a large percentage of cases are unnecessary. Fractures of the leg, with the exception of Pott's fracture, are treated on the same lines, and fractures involving the knee-joint require adequate restoration of fragments by manual pressure combined with traction. The reduction of a Pott's fracture is of greater importance than the splinting. Forcible traction with the foot in extreme extension, combined with a downward pull on the leg and an upward pull on the heel to reduce the backward displacement of the foot, should reduce the deformity, but occasionally it is necessary to divide the tendo Achillis. The foot is then forcibly inverted into an overcorrected position. In fractures of the tarsus, when reduction is complete, all that is necessary is for the foot to be kept at a right angle. Fractures of the humerus in the region of the shoulder-joint, if inefficiently treated, show limitation of abduction and external rotation. Fractures in the region of the elbow-joint are apt to result in defects of flexion and supination: supination is often deficient in fractures of both bones of the forearm; the deformity of a mal-united Colles' fracture with limitation of wrist movement, of pronation and supination and of finger flexion is well known. Fractures of the anatomical neck of the humerus are best treated by a wrist sling which allows the weight of the arm to act as an extension, with a pad in the axilla to produce slight abduction of the upper arm. In treating separation of the upper humeral epiphysis, in childhood or adolescence, it is advisable to abduct the arm to a right angle and to rotate it outward until the hand is level with the mouth, and then to immobilize the arm in this position either by one of the humerus abduction splints or in plaster. Impacted fractures of the surgical neck are best reduced by the method of Thomas: The patient is seated upon a chair and a roller-towel is passed under the axilla and fastened to a coat-hook or nail; a wrist sling is fastened around the neck and a clove hitch is made fast to the elbow, with a long loop which comes to within a foot of the floor and which acts as a stirrup for the operator's foot; extension is obtained while both hands of the operator are free for manipulation; the axis of the pull is brought to the abducted position, and when reduction appears complete the arm is forced upward and reimpacted; treatment is same as that for the anatomical neck except that a larger axillary pad is indicated. Fractures of the shaft are treated by malleable-iron fracture splints which can be bent to cover in the shoulder-joint and thus produce fixation. All fractures in the region of the elbow-joint, with the exception of the olecranon, are treated after adequate and complete reduction in the Jones' or full-flexed position; this position cannot be obtained unless reduction is complete. Whether the fracture is supracondylar, T-shaped or intercondylar, one must reduce by traction-extension, supination and hyperflexion. If this latter is not obtained the routine must be repeated until it is, and then the arm must be kept in this position at rest for at least three to four weeks. The author gives warning against passive movements after the

arm is being gradually brought down, otherwise traumatic arthritis and consequent stiffness of the elbow ensue. For this type of fracture the rectangular internal splint should be abolished. Fractures of the head and neck of the radius must be fixed in full supination, otherwise limitation of this movement will certainly result. Fractures of the shaft of both bones require consideration of two important points: first, the shaft of the ulna must be kept straight, and secondly, the curve of the radius must be conserved, as the whole length of the posterior border of the ulna is straight, and on this the curved radius rotates like a bucket-handle. Nearly all neglected fractures of the forearm show limitation of supination, whereas pronation is not defective. Colles's fracture requires complete and adequate reduction before splinting takes place. The Jones method is preferable to the handshaking plan, because the force is applied directly to the bone instead of working through the carpal bones. Twisted fracture splints, adequately padded, to keep the replaced fragments in an overcorrected position and the hand in ulnar deviation, are applied and remain for four weeks, movements of the fingers and thumb being allowed from the first.

PEDIATRICS

UNDER THE CHARGE OF

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Nephritis in Children.—BOYD (*Am. Jour. Dis. Children*, 1922, 23, 375) holds that the most common etiological factor in nephritis is an acute infection. Cases of nephritis in childhood may be divided into the following classes: (a) Acute glomerulonephritis, (1) resolving, (2) nonresolving; (b) chronic glomerulonephritis; (c) nephrosis. The acute cases which recover are differentiated from the nonresolving type by (a) a better response to renal function tests; (b) by a steady and rapid improvement clinically; (c) by a rapid diminution and complete disappearance of the albuminuria. The chronic cases differ in the history of past symptoms and signs attributable to the kidney, especially nycturia, in the presence of more numerous casts in the sediment. Relapses recur frequently in the more severe cases and of themselves justify a bad prognosis. Tests of renal function give invaluable aid in determining the prognosis, as well as the line of treatment. The concentration test and the determination of the blood nitrogen constituents furnish the most reliable data. Consideration of the responses to functional tests coupled with clinical observation enables one to foretell fairly accurately the outcome in individual cases. Administration of calcium salts, particularly the lactate, is of definite value in clearing up the edema. Pathologically the most common lesion in the acute cases is a glomerulonephritis of the intercapillary type, accompanied by more or less degeneration in the cells of the convoluted